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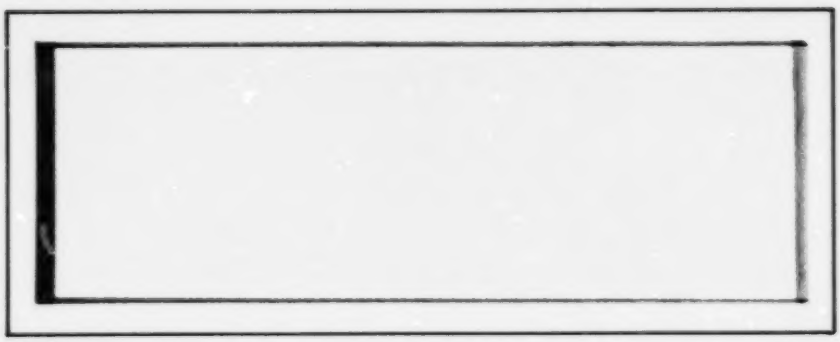

WORKING PAPER

Marketing and Economics Branch

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TOBACCO PRICING

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Introduction

This paper was prepared by the Department of National Health and Welfare in cooperation with the Department of Finance and the Department of Agriculture. It is a document which identifies the factors affecting tobacco production, consumption, taxation, substitution and pricing. It is intended to be factual and not take any particular position. Section one describes the tobacco industry while the next two sections describe consumption and pricing. Sections four, five and six look at specific characteristics of tobacco usage. Section seven outlines the industry's position while the last section looks at tobacco consumption and taxation from a public finance perspective.

1.0 THE TOBACCO INDUSTRY

1.1 Government involvement

Provincial and federal excise and sales taxes on tobacco totalled $2.3 billion in 1982, and accounted for 53% of the price of tobacco Products in the same year. Provincial taxes vary from about $3 on a carton of 200 cigarettes in Alberta and Prince Edward Island to about $9.60 a carton in Newfoundland. Federal taxes were $4.25 a carton as of January 1, 1984 and generate just under 2% of all federal revenues.1

Both provincial ministries and the federal department of Agriculture assist tobacco growers, by cooperating on export development and operating agricultural research stations in tobacco growing areas. The objectives of the research are to improve tobacco quality and to improve production efficiency. Some research is also directed to developing tobaccos with lower tar/nicotine ratios and, more recently, to developing alternative crops.2

The tobacco industry itself comprises tobacco growing, leaf processing, manufacturing, wholesaling and retailing. In 1982, total consumer spending for tobacco products was $4.4 billion, or about 1.2% of GNP.[3] There were about 18,000 man-years involved in tobacco growing, processing and manufacturing, according to 1981 calculations. The number of jobs in the industry as a whole has declined in recent years, while total production has increased.[4]

1.2 Growing and Processing

Tobacco is grown in five of the eastern provinces, but 90% of Canada's 3,000 tobacco farms. two thirds of which are owner operated, are located in southwestern Ontario. Altogether, 55,000 hectares are planted with tobacco; it is Ontario's number two cash crop. Total Canadian production for the 1982 crop year was about 80 million kilograms, with a market value to growers - who get 5¢ of every dollar consumers spend on tobacco products - of $286 million.[5] Because of frost damage, the 1982 crop was unusually small. In 1983, the crop was more typical at 109 million kilograms. The growers' average annual net income is about $25,000, but modern tobacco growing techniques make this type of farming a capital intensive operation, involving greenhouses, curing barns and specialized machinery for irrigation and harvesting.[6] There are still about 275,000 person-weeks of seasonal labour required, but tobacco growing has become increasingly mechanized.[7] Largely for this reason, tobacco farmers carry a relatively big debt load. Many other crops can be grown on the light sandy soils where tobacco is grown, but none can match tobacco for the high return on investment per hectare of crop sown. Displacement of tobacco by other crops could lead to oversupply and depressed prices for the substitute crop.

Once tobacco has been picked and flue-cured (heat-dried in curing barns), it is subject to further aging for periods of 10-12 months. The four firms that control most of the tobacco manufacturing activity in Canada buy their tobacco from leaf processors, who carry out the conditioning operation. Two of the manufacturing firms also own their own leaf processing operations.

In addition to domestic use, 45% of Canadian tobacco was exported to over 50 overseas markets in 1982. Valued at $132 million in 1982, tobacco leaf made up 1.5% of Canada's total trade in agricultural products.[3]

1.3 Manufacturing

Over 95% of tobacco manufacturing activity is accounted for by just four companies, all of them subsidiaries of large, diversified, multinational concerns. They are Imperial Tobacco (viz. Player's, du Maurier), Rothmans of Pall Mall (viz. Rothmans, Craven "A"), RJR- Macdonald (viz. Export "A", Vantage) and Benson and Hedges (viz. Mark Ten, Viscount), the four member companies which together comprise the Canadian Tobacco Manufacturer's Council (CTMC).

On a worldwide level, all of these companies show a considerable degree of vertical and horizontal integration. The example of Imperial Tobacco is illustrative. It is the largest of Canadian tobacco companies, controlling half of the Canadian tobacco market. Imperial, in turn, is a division of Imasco which controls a number of Canadian and American companies including United Cigar Stores, Tinder Box (tobacco retail stores), Shoppers' Drug Mart, Pharmaprix, Hardee Food Systems and Burger Chef. British American Tobacco, the world's largest tobacco company, owns 40% of Imasco.[8] British American Tobacco also holds a controlling interest

in Molins Ltd., the major supplier of cigarette making machinery to the world tobacco industry. Rothman's the second largest tobacco firm in Canada, owns or controls Carling-O'Keefe Breweries and Jordan Valley Wines. On a worldwide basis, other tobacco companies operating in Canada exhibit a similar degree of diversity in their holdings.

In 1982, the manufacturing and leaf processing sectors of the tobacco industry employed 8,550 people and had total sales of over $1 billion before taxes. About 23¢ of every dollar of consumer expenditure on tobacco products went to the manufacturers.3

A major component of tabacco manufacturers' costs is advertising, and the 1982 advertising outlay is estimated to have been about $96 million. Broadcast media advertising of tobacco was relinquished volumtarily by the CTMC in 1972 and a self-regulatory code was adopted and further revised in 1976. Under this code, cigarette advertising is limited to print media and point of sale, including about one quarter of all billboard advertising in Canada. The code specifies that the warning label and average tar and nicotine values will appear on packages and in selected print media advertisements, including those which appear in newspapers and magazines.

1.4 Wholesaling and Retailing

There are three kinds of tobacco wholesaling operations in Canada, altogether accounting for 3.6% of total consumer spending on tobacco. There are those operated by the manufacturers themselves, the tied wholesalers that sell exclusively to one retailing chain of pharmaceutical products or groceries and independent wholesalers who sell to non-related clients.

Tobacco Products are offered for sale in virtually every kind of retail store in Canada. In addition, cigarette vending machines are widely distributed. Tobacco products are sold in 30,000 vending machines and 90,000 retail stores, with about two thirds of all retail sales being through grocery stores and pharmacies.9

The distribution of consumer expenditure for tobacco products in 1982 is sumarized in Table 1.

2.0 CONSUMPTION TRENDS

Cigarette smokers are a declining proportion of the Canadian population. A gradual downward trend has been evident since 1966 when about 68% of men and 40% of women aged 15 and older were cigarette smokers. By 1981, it estimated that these proportions had fallen to 42% of men and 37% of women. Among women, the proportion of smokers in the 15-24 year old age group actually increased until the mid 1970's and has subsequently declined slightly. Overall, about two fifths of Canadians over the age of 14 continue to smoke cigarettes.

When consumption of cigarettes per smoker is examined, a different picture emerges. In 1966, average consumption by each smoker was 22 cigarettes per day and consumption increased to 27 cigarettes per day in 1981. This factor combined with the reduction in the proportion of smokers in the population has resulted in the average consumption per person 15 years of age and over (both smoker and non-smoker) remaining virtually constant at 11 cigarettes per day over the period. In the United States, per smoker consumption has been lower than in Canada. American consumption increased slightly from 20 cigarettes per day in 1970 to 22 per day in 1980.11

TABLE 1: CONSUMER EXPENDITURE FOR TOBACCO PRODUCTS, CANADA, 1982.

Sector	Expenditure (Billions of Dollars)	Share %
Retailers	0.66	15.0
Wholesalers	0.16	3.6
Manufacturers and Processors	1.02	23.0
Growers	0.24	5.4
Federal Taxes		
-Sumptuary	0.80	
-Sales	0.33	
-Sub-Total	1.19	26.9
Provincial Taxes		
-Sumptuary	0.95	
-Sales	0.20	
-Sub-Total	1.15	26.1
Total	4.42	100.0

Source: Peat, Marwick and Partners, Economic Impact of the Tobacco Industry in Canada for 1982. Canadian Tobacco Manufacturers' Council: Montreal, 1982.

While the percentage of smokers in the population has decreased, the actual number of smokers in Canada has risen with the overall growth in the population from 6.7 million in 1966 to 7.4 million in 1984. This growth, in association with the increase in the average number of cigarettes consumed per smoker, has led to an increase of over 40% in annual sales over that period. In 1983, however, combined sales of cigarettes and tobacco for hand-rolled cigarettes declined by 4%, the first appreciable decline since 1949.12

In 1982, Canada led all major industrialized nations in per capita consumption of manufactured cigarettes. Among all nations, only Cuba, Greece and Cyprus had levels of consumption of manufactured cigarettes greater than Canada's. The United States ranked fifth, just after Canada. Consumption was lower in the United Kingdom which ranked 22nd and France which ranked 32nd.13

Canadians also purchase substantial quantities of fine cut tobacco for roll-your-own cigarettes. Sales of fine cut tobacco increased by about 7% in 1983 over 1982 and roll-your-own cigarettes now account for 10% of total Canadian cigarette consumption.12

In recent years, cigarettes with lower average yields of tar and nicotine have become popular. The number of cigarette brands with an average yield of less than 10 mg tar per cigarette increased from 5 in 1973 to 34 in 1984. The market share accounted for by these brands increased from 4% to 22% over the same period. Of some health concern is recent evidence that many smokers who switch from high yield to low yield cigarettes compensate for the lower yield by taking more or larger puffs of longer duration, leaving shorter butts or smoking more cigarettes. When this happens, the beneficial effect of switching to low yield cigarettes is negated to an unknown extent.10

3.0 THE RELATIONSHIP BETWEEN PRICE AND TOBACCO CONSUMPTION

The relationship between price and consumption of a product is called its elasticity. Products for which increases in price lead to proportionately larger immediate decreases in consumption are said to be elastic; their elasticity is less than -1.0. Conversely, a product is inelastic if its elasticity is greater than -1.0 implying that changes in price are associated with proportionately smaller changes in consumption. The demand for tobacco is inelastic.

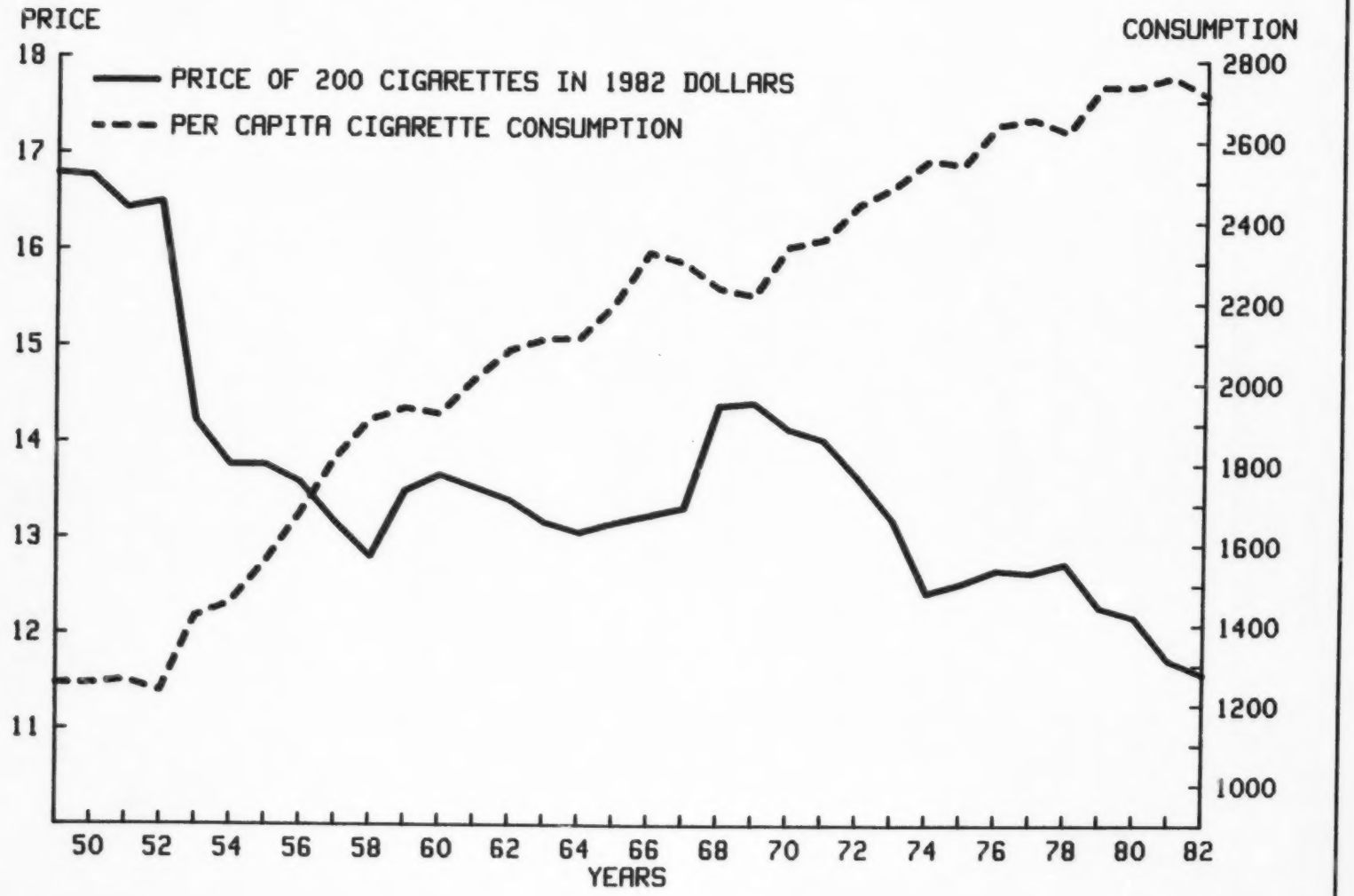
The inelastic demand of tobacco has been repeatedly confirmed in many studies in different countries. In a survey of British price and consumption studies, Sinnott, Gillian and Kyle[14] found estimates of cigarette price elasticities ranging form 0 to -1.0, but they observed that the results tended to cluster in the range -0.2 to -0.6.

An analysis of American tobacco price elasticities, for the period 1929 to 1973, yielded an over all value of -0.71.[15] A more recent analysis of the same data estimated the elasticity to be -0.34 when the price was rising and -0.72 when the price was falling.[16]

Canadian studies that examined the relationship of cigarette prices to consumption for the periods 1950-1973,[17] 1949-1980[18] and 1971-1981[19] reported elasticities of -0.75, -0.73 and -0.71 respectively.

For the period 1949-1982 in Canada the real price of tobacco was generally falling and consumption was generally increasing, as shown in Figure 1. All of the estimates of elasticities in Canada noted earlier were based on falling real prices and rising consumption. If consumers differ in their response to rising real prices, the above elasticities may differ for 1983 since real prices for this year rose by 14% from 1982.

FIGURE 1: ANNUAL PER CAPITA CONSUMPTION BY CANADIANS, AND PRICE OF 200 CIGARETTES IN CONSTANT 1982 DOLLARS, 1949-82.



4.0 THE RELATIONSHIP BETWEEN PRICE, TAX AND ILLEGAL ACTIVITY

When the retail price differential widens between similar markets, there is an incentive for the product to move from the lower priced to the higher priced market. Markets may be differentiated by non-price factors, reducing such incentives.

For example, if Canadian cigarettes were to be taxed heavily relative to American cigarettes, smuggling of American cigarettes into Canada might be anticipated. However, American cigarettes, which are made from blended oriental, burley, Maryland and flue-cured tobaccos have a distinctively different taste from Canadian cigarettes which are made almost exclusively from flue-cured tobaccos. Repeated attempts to market American cigarettes in Canada have not met with much success. Because of these qualitative differences, a relatively large price differential between American and Canadian cigarettes may exist before smuggling of American cigarettes would become prevalent.

Illegal activities that could arise from high relative taxes in Canada would include:

(a) legitimately exporting Canadian cigarettes to another country with low cigarette taxes, and then smuggling them back into Canada,

(b) manufacturing cigarettes, qualitatively similar to Canadian cigarettes, abroad and smuggling them into Canada,

(c) illegally shipping tobacco products from licensed tobacco factories without paying taxes,

(d) setting up unlicensed tobacco factories and shipping tobacco products from them without paying taxes.

These problems have not arisen in Europe since all countries maintain uniformly high cigarette taxes. Some problems have been observed between provinces in Canada when large tax differentials were reflected in large price differentials. This was the case before 1983 between Alberta and Ontario. It has been suggested that interprovincial smuggling is currently quite prevalent from Nova Scotia to Newfoundland because of a large price differential.

In Canada, about 53% of the price of cigarettes is tax (0.039$ Can. per cigarette); in the United Kingdom, taxes account for nearly 80% of the price of cigarettes (0.85$ Can. per cigarette).[24] In the United States, the taxes on cigarettes range from 33% of the price in North Carolina (0.013$ Can. per cigarette) to 52% in Washington D.C. and Wisconsin (0.028$ Can. per cigarette).[25]

5.0 TOBACCO PRICE AND SOCIAL CLASS PATTERNS OF SMOKING

Cigarette taxes are regressive, falling more heavily on the poor than the rich since expenditures on tobacco constitute a greater proportion of income for low income earners than for those with high incomes.

However, in examining the regressivity of tax increases for tobacco products, it is useful to examine the response of different income groups to cigarette price increases. While no data exist in Canada to illuminate this issue, such data are routinely collected in the United Kingdom, and the question has been the subject of a recent British study.[26] In that case, there appears to be some evidence that low income earners are more responsive than high income individuals to changes in tobacco prices. That is, lower income smokers are more likely to

quit smoking following a price increase than are higher income smokers. If this is the case for Canada, the regressivity of tobacco tax increases may be mitigated.

Traditional economic reasoning would indicate that individuals who reduce or eliminate their consumption because of a price increase suffer a reduction in their utility or welfare. However, it has been suggested that usual calculations of utility loss may not be appropriate for addictive products.[27] Indeed, since 75% of Canadian smokers have indicated a desire to quit smoking by attempting to do so in the past,[28] it might well be argued that for most smokers a reduction in smoking represents an increase rather than a decrease in utility over the long run. The implication of these two factors is that tobacco tax increases may be less regressive than the present distribution of the tax burden would suggest.

6.0 SUBSTITUTION OF ONE TOBACCO PRODUCT FOR ANOTHER IN THE FACE OF PRICE DIFFERENTIALS AMONG TOBACCO PRODUCTS

Substitution of one tobacco product for another when price is increased for some tobacco products but not others has been reported and the Danish experience in this regard is illustrative. Manufactured cigarettes are taxed in Denmark more heavily than cigarillos so that cigarillos cost half as much as cigarettes, by weight of tobacco. As a result, cigarillo smoking has become very popular in Denmark; 32% of all smokers now smoke cigarillos. Such differential taxes could be expected to lead to unwanted health effects. Danish cigarette smokers have been found to have twice the risk of heart attack as Danes who never smoked. But when compared to non-smokers, heavy cigarillo smoking Danes had four times the risk of heart attack.[29]

In Canada, the price of roll-your-own cigarettes is significantly lower than that for manufactured cigarettes. both because of the lower cost of production and lower federal and provincial taxes. The switch from higher-priced products to lower cost substitutes is likely the factor underlying the observation that in 1983 while sales of manufactured cigarettes declined, sales of hand-rolling tobacco increased.

7.0 REPRESENTATION FROM THE TOBACCO INDUSTRY

During 1983, representatives of the tobacco industry presented the Minister of Finance with documents concerning the economic impact of the tobacco industry and the impact of the current tax system on tobacco products. They have expressed deep concern that tax increases on tobacco were excessive.

In their presentations to the Ministry of Finance, tobacco industry representatives pointed out that consumer expenditure on tobacco products was $4.4 billion in 1982 and the industry provided 62,000 person-years of direct and indirect employment. Statistics Canada reports there are 18,000 person-years of direct employment in tobacco growing and manufacturing enterprises. This total was declining even in years of increasing production due to increased mechanization.

If tobacco consumption were to continue to decline, employment in the tobacco industry would inevitably decline also, perhaps at a faster rate than has prevailed over the last few years.

Tobacco growers, however, face a somewhat more difficult situation if tobacco consumption enters a period of long-term decline. They have substantial investments in tobacco growing rights or quota and specialized equipment for tobacco growing and harvesting, and in the face of declining markets, they would be

forced to accelerate their diversification into other crops. While one of the more attractive alternative crops in tobacco growing areas is peanuts, it will not be an economically viable alternative for many tobacco farmers until further development occurs in the peanut growing and processing industries. Tomatoes, blueberries, canola, rye, corn, mung beans, strawberries and triticale are among the many other crops that can be grown on the sandy soils of tobacco growing lands. At the current time, however, none can match the monetary return that is available from tobacco.

One major concern of the industry with regard to the tax system has been the indexing system for the excise levies on tobacco products. This system was introduced in 1980 in order to maintain the real value of the taxes on alcohol and tobacco. Under the system, the excise levies on these products were adjusted each September to the movements in the alcoholic beverages and tobacco products CPI subgroups. In response to problems identified in the technical operation of the scheme, the Minister created a task force, consisting of representatives of the Department of Finance and the alcoholic beverage and tobacco products industries, to study the issue. In their report to the Minister in May, 1984, the task force recommended that the excise levies on alcoholic beverages and tobacco products be indexed to movements in the total consumer price index (CPI) rather than the specific alcoholic beverages and tobacco products subgroups of the CPI. In June of 1984, the Minister announced that he had accepted the task force's recommendation and, commencing in September 1984, indexing adjustments would be based on the new system.

8.0 TOBACCO PRICES FROM PUBLIC FINANCE PERSPECTIVE

Sumptuary taxes on tobacco products can be viewed as a way of accounting for the external costs that arise from the use of these products. From a public finance perspective, where an activity imposes certain costs upon other individuals in the society, the activity is said to involve negative externalities or external costs. These costs are external in the sense that they are not taken into account by the performer of the activity. In other words, if the price of these products faced by the consumer reflects only the costs directly involved with the production and marketing (i.e. the private costs) then the consumer does not bear any costs imposed upon other individuals in the society arising form the consumer's use of the product.

There are many externalities that have been associated with the use of tobacco. For example, the use of tobacco has a proven negative impact on the health of an individual user. The negative health impact raises the cost of health care due to the increased incidence of diseases attributed to the use of tobacco. This increased cost is an external cost to society unless the extra cost is borne directly by the smoker. Similarly, external costs can be established for premature death as well as lost productivity in the workplace due to smoking. Another form of externality occurs when non-smokers are exposed to smoke arising from the use of tobacco products. It has been found that non-smokers exposed to ambient tobacco smoke over an extended period of time also experience adverse health effects. These adverse health effects lead to higher health costs as well as shorter life span, which would not be reflected in the private cost of tobacco products. Other externalities attributable to smoking include costs due to fires caused by smoking, extra costs of ventilation in buildings, and the increased cost of maintenance.

Economic efficiency calls for the price of a tobacco product to equal the social marginal cost of the product. The solution to externalities, from a public finance perspective, is to internalize these external costs. The social marginal cost is defined as the extra cost, both external and internal, incurred by society through the consumption of one more unit of the product. The external costs of smoking are internalized by imposing a tax on tobacco products so that the price of these products equals the social marginal cost. This efficiency condition implies that the optimum tax would equal the marginal external cost which is the extra external cost incurred by society through the consumption of one more unit of a tobacco product. It should be noted that the marginal external cost of smoking can be reduced through schemes such as higher medical and fire insurance premiums which require the smoker to directly pay for the external costs attributable to his smoking. A tax would still be necessary to cover those extra external costs that can not be recovered from the smoker directly.

The application of the above discussion in practice is not a simple task. Various problems arise in estimating the external costs of smoking. The main problem is identifying and accurately estimating them. For example, there are several methods available to ascertain the costs of premature death caused by smoking, but no universal acceptance of any one of them.[30-35] A second problem arises when trying to determine the optimum tax. The marginal external cost of smoking is difficult to estimate. This problem could be overcome if one could assume that the marginal external cost is constant, whereby the efficiency condition would then be equivalent to equating the total tax revenue from a tobacco product with the total external costs associated with that product.

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